Local ecological knowledge of Ivory Gulls in Newfoundland and Labrador

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ABSTRACT

Local ecological knowledge on Ivory Gulls was collected from 94 residents in Newfoundland and Labrador. The Ivory Gull was most commonly known as an 'Ice Partridge' and was usually observed between September and May (Fall through Spring) while seal hunting or in community harbours. Only one interviewee reported seeing Ivory Gulls in the summer months. Most interviewees reported seeing individual or small groups of adult Ivory Gulls most of the time, however, some people were familiar with the juvenile birds. Perceived population trends over the interviewees' lifetime suggested that the number of Ivory Gulls had declined or remained unchanged, few identified increases. Many interviewees discussed the rarity and variable nature of their observations and how they were dependent on ice and wind conditions. No interviewees were aware that the Ivory Gull is protected under the federal *Species at Risk Act* but most acknowledged that they knew it was illegal to kill any gull.

RÉSUMÉ

Des connaissances écologiques locales sur les Mouettes blanches ont été recueillies auprès de 94 résidents de Terre-Neuve-et-Labrador. Ces personnes connaissent la Mouette blanche le plus souvent sous le nom de *Ice Partridge* (perdrix des glaces) et elles l'observent généralement entre septembre et mai (de l'automne au printemps) durant la chasse au phoque ou dans les ports des collectivités. Une seule des personnes interrogées a mentionné avoir vu des Mouettes blanches durant l'été. Bien que la majorité des personnes interrogées aient indiqué avoir vu la plupart du temps des adultes, solitaires ou en petits groupes, certaines ont cependant dit avoir souvent observé des juvéniles. Les tendances des populations perçues par les personnes interrogées au cours de leur vie donnent à penser que les effectifs de la Mouette blanche ont décliné ou sont demeurés stables; seules quelques personnes ont fait part d'augmentations d'effectifs. De nombreuses personnes interrogées ont fait état de la rareté et de variabilité de leurs observations, qui dépendaient, selon elles, des conditions de glace et de vent. Aucune des personnes interrogées ne savait que la Mouette blanche est protégée en vertu de la *Loi sur*

les espèces en péril adoptée par le gouvernement fédéral, mais la plupart ont dit savoir qu'il est interdit de tuer des mouettes ou des goélands.

1.0 INTRODUCTION

Due to low population numbers in Canada, the Ivory Gull (*Pagophila eburnea*) was designated Rare (equivalent to Special Concern) in 1979 and is currently listed as a species of Special Concern under the federal Species at Risk Act (SARA; COSEWIC 2001). Based on an updated status report (Stenhouse *et al.* 2005), COSEWIC has recommended that that the Ivory Gull be uplisted to Endangered (COSEWIC 2006).

In North America, Ivory Gulls breed in a relatively restricted area in the eastern Canadian High Arctic (Haney and MacDonald 1995). Annual colony surveys since 2002 have reported an 80% decline in the Canadian breeding population of Ivory Gulls compared to that of the 1980s (Gilchrist and Mallory 2005). This decline was observed in all habitat types and across the Canadian breeding range. These recent surveys have confirmed population declines reported by Inuit residents of several Canadian Arctic communities (Akearok *et al.* 2002; Mallory *et al.* 2003). Due to the consistency of the decline across the breeding range, it has been suggested that the causes of the decline may be related to factors occurring during migration or on wintering grounds (Gilchrist and Mallory 2005).

In general, Ivory Gulls breeding in Canada are thought to migrate east and south to winter along the edge of Arctic pack ice from the Davis Strait to the Labrador Sea (Haney and MacDonald 1995). Large concentrations of Ivory Gulls have been documented in the Labrador Sea (Orr and Parsons 1982). These concentrations are known to have greatly outnumbered the Canadian breeding population (even before the recent declines), suggesting that Ivory Gulls from breeding populations in Greenland, northern Norway and northwest Russia also use Canadian waters in the winter. However, very little is known about the Ivory Gull's distribution and abundance outside of the breeding season, as scientific studies of wildlife living in remote areas, including offshore and the Arctic, are difficult and expensive.

Ivory Gulls are opportunistic feeders, known to be attracted to the blood and carcasses of polar bears, whales, walruses, and seals (Haney and MacDonald 1995). As a result, this species is regularly observed by marine hunters and residents of northern

coastal communities (Akearok *et al.* 2002). Local ecological knowledge (hereafter LEK), knowledge based on a person's experiences and observations from nature and/or that passed down from previous generations (traditional ecological knowledge), has been collected on Ivory Gulls from residents in Arctic Canada (Akearok *et al.* 2002; Mallory *et al.* 2001; 2003). The LEK data collected were generally qualitative rather than quantitative, as expected for an uncommon and seldomly harvested species, but provide information regarding locations and timing of movements and suggested broad population declines (Akearok *et al.* 2002; Mallory *et al.* 2003). This type of LEK data is useful to wildlife managers as it can indicate population trends and distributions and help focus scientific studies (Mallory *et al.* 2003). The goal of the present study was to collect similar LEK data on Ivory Gulls at the southern reaches of their wintering range from selected residents of Newfoundland and Labrador, Canada. Specifically, qualitative information on the species distribution (location and timing) and relative abundance were sought.

2.0 METHODS

Interviews were conducted in person and/or by telephone in Newfoundland in February and March of 2003, and in Labrador between November 2003 and March 2004. Hunters of marine wildlife (e.g. seals, sea ducks, murres) were non-randomly selected to be interviewed as they were most likely to be familiar with the Ivory Gull. A list of names and contact information for people who would likely agree to participate in these interviews was developed from the interviewer's personal knowledge (P. Ryan). This list was expanded with information acquired through the Department of Fisheries and Oceans Marine Mammals Section, and from interviewees that had already participated in the study. Many of the people interviewed were known to the interviewer before this study, or knew the interviewer by name from previous contact or reputation.

A fixed questionnaire was developed, but questions were not always asked in order. Free-flow discussion was encouraged and the conversation was directed by the interviewer in order to obtain the information required to complete the questionnaire. Information gained through the Newfoundland interviews (Appendix A: Newfoundland

Questionnaire) led to the expansion of the questionnaire for use in Labrador (Appendix B: Labrador Questionnaire). The interviews were generally one on one, however, in some instances a family member or friend contributed to the discussion. Questions were adapted from those used in recent Ivory Gull LEK studies (Akearok *et al.* 2002; Mallory *et al.* 2003). Questions were designed to determine the timing, distribution, and perceived trend in numbers of Ivory Gulls in the region. In the Labrador interviews, questions were also asked regarding sea ice patterns near the communities. Following the interview, all interviewees were advised that the information obtained in this study would be summarized in a report and a copy of this report would be provided to them.

3.0 RESULTS

A total of 109 interviews were conducted in 25 communities in Newfoundland (58 interviews) and 17 communities in Labrador (51 interviews: Figure 1). The participants were mostly male (109/119, 92%) and between the ages of 23 and 89 years (average age, 56 years). Most people interviewed reported "yes" to seeing Ivory Gulls and were able to give accurate descriptions of the bird and/or identify them correctly in photographs (94/109, 86%; 53/58 in Newfoundland and 41/51 in Labrador). The Ivory Gull was most commonly known to participants as an 'Ice Partridge' and by other local names such as 'Ice Gull', 'Snow Gull', 'Seal Gull', 'Swile Bird', 'Seal Bird', 'Sea Partridge', 'Outside Gull' and 'Winter Gull'. Most observations were made while hunting seals (44/88, 50%) or in local harbours (31/88, 35%). Other observations were made while hunting sea ducks/murres (7/88, 5%) or fishing/boating (6/88, 7%). This pattern of observations was very similar in both the Newfoundland and Labrador interviews. Most interviewees from Labrador reported seeing only adult Ivory Gulls most of the time (90%), however, some people were familiar with juveniles (37%), usually referred to as the "speckity ones". Individual or small groups of Ivory Gulls were usually observed at any one time (60% saw 1 or 2 birds, 23% saw ≤ 5 birds, and 17% saw > 5 birds). No interviewees reported seeing Ivory Gull breeding behaviour or nests.

Timing and Location of Observations

Observations of Ivory Gulls occurred most often between September and May (Fall through Spring; 93/94, 99%). Peak timing of these observations occurred earlier in Labrador (Fall/Winter) than in Newfoundland (Winter/Spring: Figure 2). One interviewee from Labrador reported seeing Ivory Gulls in the summer months. Observations of Ivory Gulls almost always occurred in association with ice (99%), as only one interviewee reported seeing an Ivory Gull on open water. Birds were commonly seen in community harbours (Figure 3), in coastal areas (hunting sea ducks/murres, fishing, boating), or offshore at the ice edge (seal hunting). One seal hunter indicated that Ivory Gulls rarely occur south of Funk Island and become more common moving north from there (Figure 3). The observation of Ivory Gulls in summer occurred in July off Smokey, on the north side of Groswater Bay, when there was a lot of ice around (Figure 3). The interviewee last saw an Ivory Gull in that area in July/August of 2000 or 2001 perched on an iceberg.

Behaviour and Association with Other Animals

Ivory Gulls were most commonly seen around or eating seals (46%). Other birds were seen perched on the ice (27%), flying (23%), and around the local wharf or shoreline (4%). Ivory Gulls were reported to eat mainly seals, fish, plankton, or some combination of these (27/28, 96%). One interviewee responded that Ivory Gulls ate at the community garbage dump (Black Tickle, Labrador). Few people thought that Ivory Gulls followed hunters or sealers when looking for food (8/22, 36%). There was no consensus on whether Ivory Gulls associated with other animals. Responses to this question included associations with other gulls (N = 9), no associations with other gulls (N = 1), no associations with other animals (N = 8), and associations with other marine animals such as seals, polar bears and whales (N = 3).

Local Population Status

Interviewees that see Ivory Gulls regularly (i.e. every couple of years) were asked to comment on their local population status. The Newfoundland questionnaire asked about population trends over the last 5 years; however, many people described trends that have occurred over their lifetime. The Labrador questionnaire was adapted to this and asked about population trends over the last 5 years as well as during the interviewees' lifetime.

Perceived population trends over the last 5 years were variable (N = 7; Same 3; More 2; Less 1; Unsure 1). Many interviewees had not seen an Ivory Gull in the last 5 years and others had only seen them once or twice over that time period. Perceived population trends over the interviewee's lifetime were more consistent. Most interviewees responded that the local population had either declined (31/62, 50%) or remained the same (19/62, 31%). Nine (14%) interviewee's were unsure. If interviewee's perceived populations as being the same or they were unsure, most discussed the rarity and variable nature of their observations and how they were dependent on ice and wind conditions. Only 3 (5%) interviewees thought there were more Ivory Gulls now than in the past and these reports were spread across the study area.

Only 2 interviewees commented on why they may see less Ivory Gulls now than in the past. One suggested that he may not be able to see them because he can't travel as far out on the ice as he used to, and the other suggested that warmer temperatures may keep the birds further north and that there are less because Black-backed Gulls eat them.

Use of Ivory Gulls

Nineteen interviewees discussed killing and eating Ivory Gulls, as with other gulls, in the past (> 15-20 years ago). Ivory Gulls were usually baited with seal blood while hunting seals. No interviewees thought that any gulls were still being killed for food.

Canadian Legislation (SARA) and the Ivory Gull

No interviewees were aware that the Ivory Gull is protected under the federal *Species at Risk Act*. However, many interviewees responded that they were aware that gulls were protected and that it was illegal to kill any gull.

Labrador Sea Ice

Of the 40 interviewees that responded to the sea ice questions, 36 (90%) indicated that they used sea ice to travel and/or hunt. Most interviewees were unsure whether Ivory Gulls relied on ice and/or seals. Those interviewees that felt that Ivory Gulls relied on ice (N = 15) or seals (N = 13) suggested that they needed ice for resting and feeding, and seals for food. Food from seals was suggested to occur either directly by eating seal carcasses or indirectly by feeding off fish scraps from the seals.

There were more responses to questions about changes in fast ice (i.e. ice anchored to land, N = 39) than pack ice (i.e. drift ice, N = 15). Most interviewees agreed that fast ice was thinner (85%) and formed later (94%) than in the past. The responses for observed changes in pack ice were more variable, but trends were similar to fast ice (thinner or smaller pans 60%, and formed later 53%). Many interviewees indicated that pack ice varied year to year and was dependent on sea current and wind conditions. Interviewees also agreed that polynyas (i.e. open areas in ice) are bigger and that the ice around them is thinner (10/12, 83%) than in the past.

4.0 DISCUSSION

Ivory Gulls are commonly observed at the ice edge off Newfoundland and Labrador by seal hunters, and as regular winter visitors to coastal communities throughout Labrador and northern areas of Newfoundland. The distribution of Ivory Gull observations (> 50° N) is within the wintering range reported in previous literature (Orr and Parsons 1982). The timing of these observations, September through May, also agrees with that period when Ivory Gulls are not present at the breeding colonies (Haney

and MacDonald 1995). The difference in the peak timing of Ivory Gull observations in Labrador (Fall/Winter) and Newfoundland (Winter/Spring) is likely a function of sea ice presence as it moves southward. Summer sightings of Ivory Gulls in Newfoundland and Labrador appear to be very rare, with only one observation in this study. However, other researchers have reported seeing birds at sea off Labrador in the summer months (Brown 1976).

Given that only a few individual birds were observed at any one time and that yearly observations were quite variable, most interviewees were not confident making predictions about Ivory Gull population trends over the last 5 years. Interviewees were more confident making population trend predictions over their lifetime. In general, interviewees felt that the population of Ivory Gulls had declined (50%) or remained the same (31%) as they were in the past. A recent survey within the pack ice off northern Newfoundland in March 2004 observed fewer Ivory Gulls (0.02 per observation period) than a similar survey conducted in 1978 (0.69 per observation period; I. J. Stenhouse and J. Wells, unpublished data).This decline matches evidence from Canadian breeding populations, where populations have declined drastically in the last 20 years (Gilchrist and Mallory 2005). Similarly, declines were noted by Inuit residents of several Canadian Arctic communities (Akearok *et al.* 2002, Mallory *et al.* 2003) and during at-sea surveys in the High Arctic in 1993 and 2002 (Chardine *et al.* 2004). Whether this overall decline has been a gradual decrease or a single (or few) sudden drops in the population is not known, making a diagnosis of the cause of decline difficult. Stenhouse *et al.* (2004) reported high recovery rates of Ivory Gulls shot by hunters (mostly in Greenland), suggesting illegal harvest may have played some role in the decline of this species. As the name 'Ice Partridge' implies, Ivory Gulls were considered excellent table fare in Newfoundland, and hunting them was a long-time tradition (Bent 1921, Todd 1963). Encouragingly, however, respondents in this study consistently reported that hunting of this species is no longer prevalent and recent Canadian recoveries of marked Ivory Gulls were relatively few (although most banding occurred in the 1980s, Stenhouse *et al.* 2004), suggesting that the harvest of this species in Canada has all but ceased.

Although declines in Newfoundland and Labrador waters may reflect the general decline in Canadian breeding birds, other explanations are possible. Respondents noted

declines in sea ice cover, especially land-fast ice, so any perceived reductions could be linked to reduced ice cover, thus Ivory Gulls remained in other areas (presumably further north) with greater ice concentrations. It is also not clear which component of the global Ivory Gull population winters in Newfoundland and Labrador waters. If Orr and Parsons (1982) estimate of 35,000 wintering birds is correct, then much of the global population would be expected to winter in the Davis Strait and Labrador Sea, and trends seen in Newfoundland and Labrador would be more representative of the global population. Trends for other breeding populations are not well known, although declines are suspected for some. Furthermore, band recoveries indicate links between Canadian breeding birds and birds of the Northwest Atlantic, while recent genetic data suggest a link between Canadian breeding birds and birds wintering in the North Pacific (S. Royston, unpublished data). Overall, there is a clear need to resolve the population affinities between breeding and wintering areas in this species.

The observations of Ivory Gulls in this study were primarily of individual or small groups of birds, consistent with previous literature suggesting that Ivory Gulls are solitary or occur in small flocks in winter (Cramp and Simmons 1983; Haney and MacDonald 1995). Although juvenile birds were familiar to many people in this study (37%), most reported seeing adults only most of the time (90%). Ivory Gull observations made from December-April at the northern tip of Newfoundland (L'Anse aux Meadows area) from 1976-1982 also indicate the presence of adults most of the time (68%, both adults and juveniles = 26%, and juvenile only = 6%: Bruce Mactavish unpublished data). Whether or not the wintering range of juvenile birds differs from adults is not known, but this has been listed as a priority for future research (Haney and MacDonald 1995). A low number of juveniles in the population would suggest that reduced breeding success could be a source of the recent declines seen in the population. Ivory Gulls are also known to carry loads of various toxins (Buckman *et al.* 2004) however, it is not known if these levels are sufficient to cause reproductive declines or reductions in survival. Recent investigations on mercury in Ivory Gull eggs have shown very high levels of this heavy metal (Braune *et al.* 2006). Interestingly, in spite of significant recoveries of shot birds, Stenhouse *et al.* (2004) estimated adult survival of Ivory Gulls breeding in Canada at 0.86, a survival rate expected for a gull the size of an Ivory Gull.

Unlike some earlier accounts of this species, which highlight their association with seals and polar bears for food, respondents in this study did not consistently identify these associations. Observations in this study were consistent with more recent studies on Ivory Gull foraging, suggesting a broad and opportunistic diet, which includes scavenging at marine mammal carcasses, fish, and a variety of marine invertebrates and macro zooplankton (summarized in Haney and MacDonald 1995).

In summary, this study provides some insights on Ivory Gulls in Canada at a time of year when rigorous scientific study is challenging. Although a rare bird, the Ivory Gull is still well known to people in the communities of northern Newfoundland and Labrador. Most interviewees suggested that populations of Ivory Gulls had declined or remained unchanged and few identified increases. Further work to determine the affinities of birds wintering in Newfoundland and Labrador are clearly warranted. Public education to describe its plight as an Endangered species and discuss how the public can help may be worthwhile.

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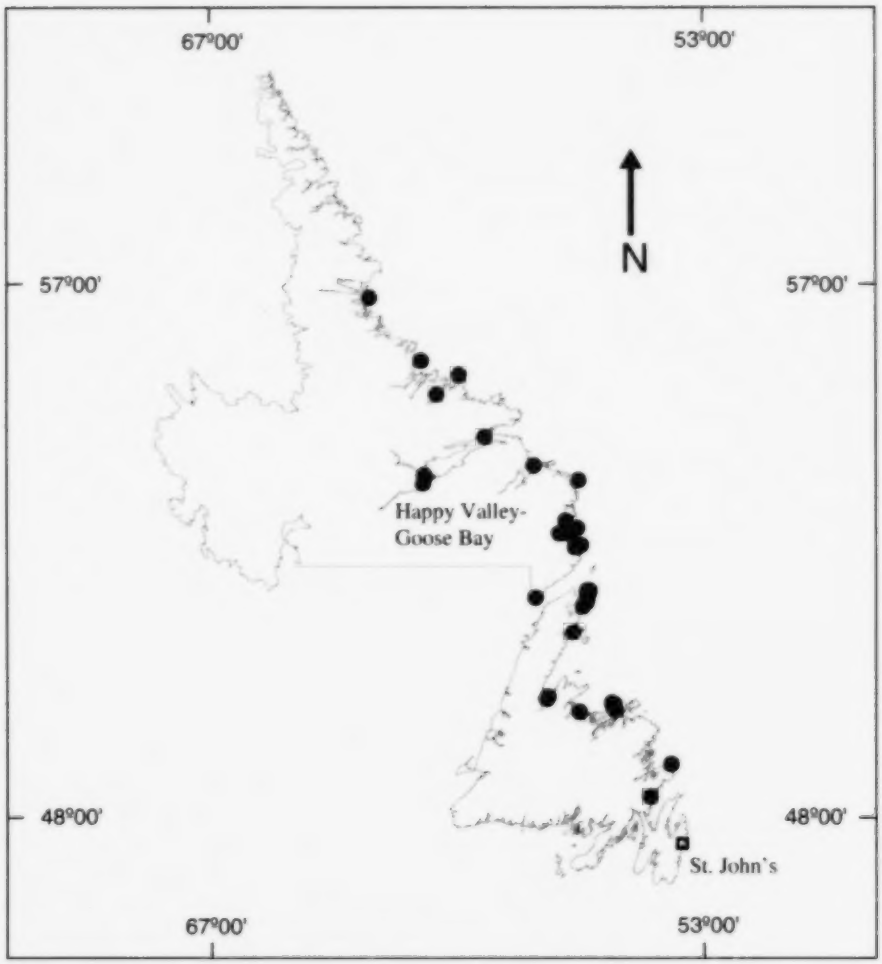

Figure 1: Distribution of communities in Newfoundland and Labrador where Ivory Gull Local Ecological Knowledge was collected.

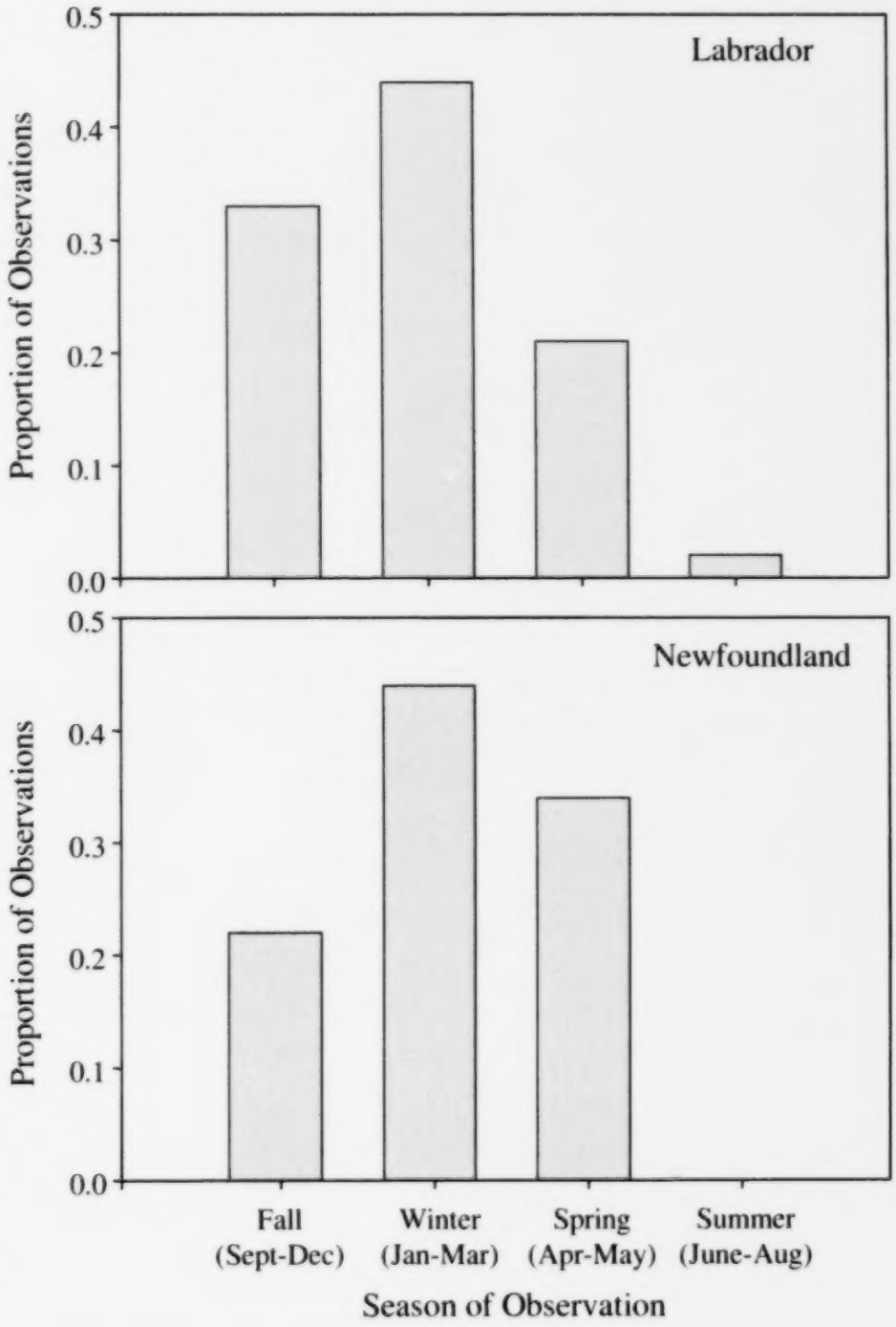

Figure 2: Proportion of Ivory Gull observations occurring within each season in Newfoundland and Labrador.

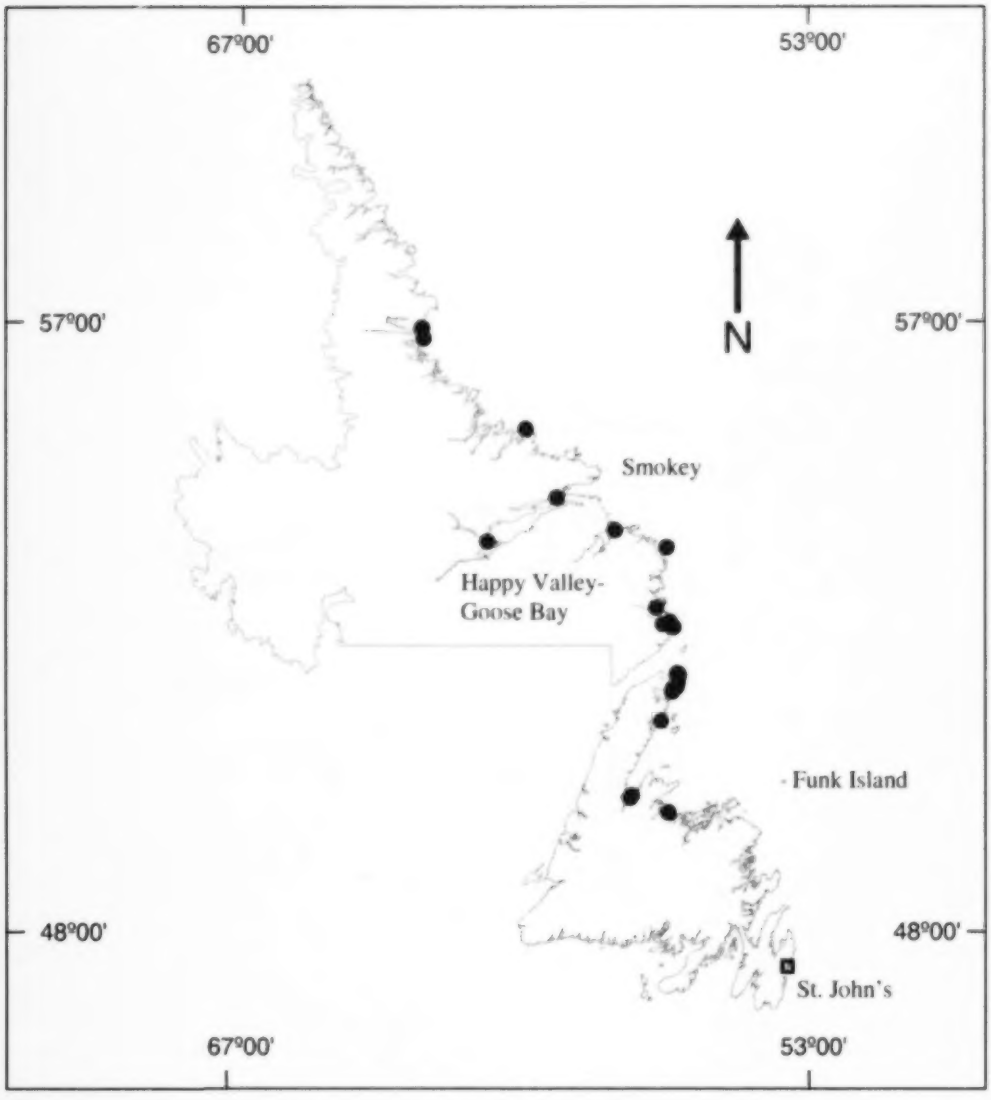

Figure 3: Location of observations of Ivory Gulls in community harbours.

6.0 APPENDICES

APPENDIX A: Newfoundland Ivory Gull Questionnaire

1. Have you ever heard of an 'Ivory Gull'? _____ or an 'Ice Partridge'?_____
2. Please identify the Ivory Gull in the following pictures.
3. Have you ever seen an Ivory Gull? (or the bird by another name)?
4. When & where did you last see an Ivory Gull?
5. When & where did you first see an Ivory Gull?
6. Where & when have you seen Ivory Gulls most often?
7. Do you hunt: turrs? _____ sea ducks? _____ seals? _____
8. If you know and see Ivory gulls regularly (e.g. each year), would you say that there are: more _____ less _____ same_____ not sure _____ in the last 5 years?

Additional remarks on Ivory Gull habits, occurrence, and observations.

APPENDIX B : Labrador Ivory Gull Questionnaire

Ivory Gull

1. Have you ever seen an Ivory Gull? (or the bird by another name)?

2. Please identify the Ivory Gull in the following pictures.

3. Have you ever heard of an 'Ivory Gull'? ___ or an 'Ice Partridge'?___ or a 'Seal Bird'? ___ or an 'Ice Gull' ___ or 'Naujarluk'? _____. [These are all names for the same bird.]

4. Have you seen adults (all white plumage) only? _____, juveniles ('speckity' plumage) only? _____ or both adults and juveniles ?_____

5. When (what month? _____ what year? _____) & where (place? _____) and (habitat? _____) did you Last see an Ivory Gull?

6. When (what month? _____ what year?_____) & where (place? _____) and habitat? _____ did you First see an Ivory Gull?

7. Where (place? _____ and habitat? _____)
& when (what month? _____ and what year? _____) have you seen it Most often?

8. Do you see Ivory Gulls in consecutive years?

9. How many Ivory Gulls do you normally see at one time?

10. Are you seeing mainly adults (all white plumage)? _____,or juveniles ('speckity' plumage)? _____ or both adults and juveniles? _____ (where and when you have seen them most often.

11. What are you doing when you see it most often? _____

12. What was the bird doing when you saw it First _____ Last _____ and Most often _____.

13. Have you seen IVGU nests before? [Only asked if interviewee indicate that they have seen indications of breeding.]

14. Do you know what IVGU eat when they are here?

15. Do you know where IVGU look for food? _____ Do they follow hunters? _____ or sealers? _____

16. Do ivory gulls associate with other animals? _____

17. Do you know when ivory gulls arrive this area? ___ leave this area? _____

If you know and see Ivory gulls regularly (eg. more than once every two years):

18. Would you say that there are: more ___ less ___ ____ in the last 5 years?

19. Would you say that there are: more _____ less _____ in your lifetime?

20. Why do you think that you can't tell if the numbers have changed?
Or
Why do you think numbers have changed?

21. Over the years do you still travel to the same places to hunt seals or other animals, or to get from place to place? (Y/N and description _____)

22. Did you know that there are laws in Canada protecting the Ivory Gull?

23. Did you know before this talk that the Ivory Gull may be in trouble?

<u>Labrador Sea Ice</u>

1. Do you think that IVGU rely on ice? _____

2. Do you think they rely on seals? _____
In what way?_____

3. Is there a difference in ice conditions near and around your home community now vs. in past? _____

4. Is there fast ice near your home community (Y/N) and if yes, do you hunt or travel there? (Y/N).

5. Has the fast ice gotten thinner or thicker? _____
Does the fast ice form later? _____ or earlier?

6. Is there pack or drift ice near your home community (Y/N) and if yes, do you hunt or travel there? (Y/N).

7. Does the drift ice arrive later? ____ or earlier? _____ Does the drift ice break up earlier? _____ later?

8. How else is the ice different? (eg. smaller pans, less multiyear (old) vs. first-year ice?)

If a change in ice conditions is indicated:

9. Why do you think that ice conditions are different now?

If hunting seals in their holes or at ice edge (sina) is indicated:

10. Are there any changes around seal holes?
11. Do the seal holes break up sooner?
12. What changes have you observed around seal holes?
13. Do you know why that is?
14. Do you know why there aren't as many seal holes?